Mesenchymal Stem Cells (MSCs)

HSCs ; MSCs ⟶ multipotent ⟶ Mesenchymal Stromal Cells

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MSCs ⟶ Adult Stem Cells.

Properties of MSCs

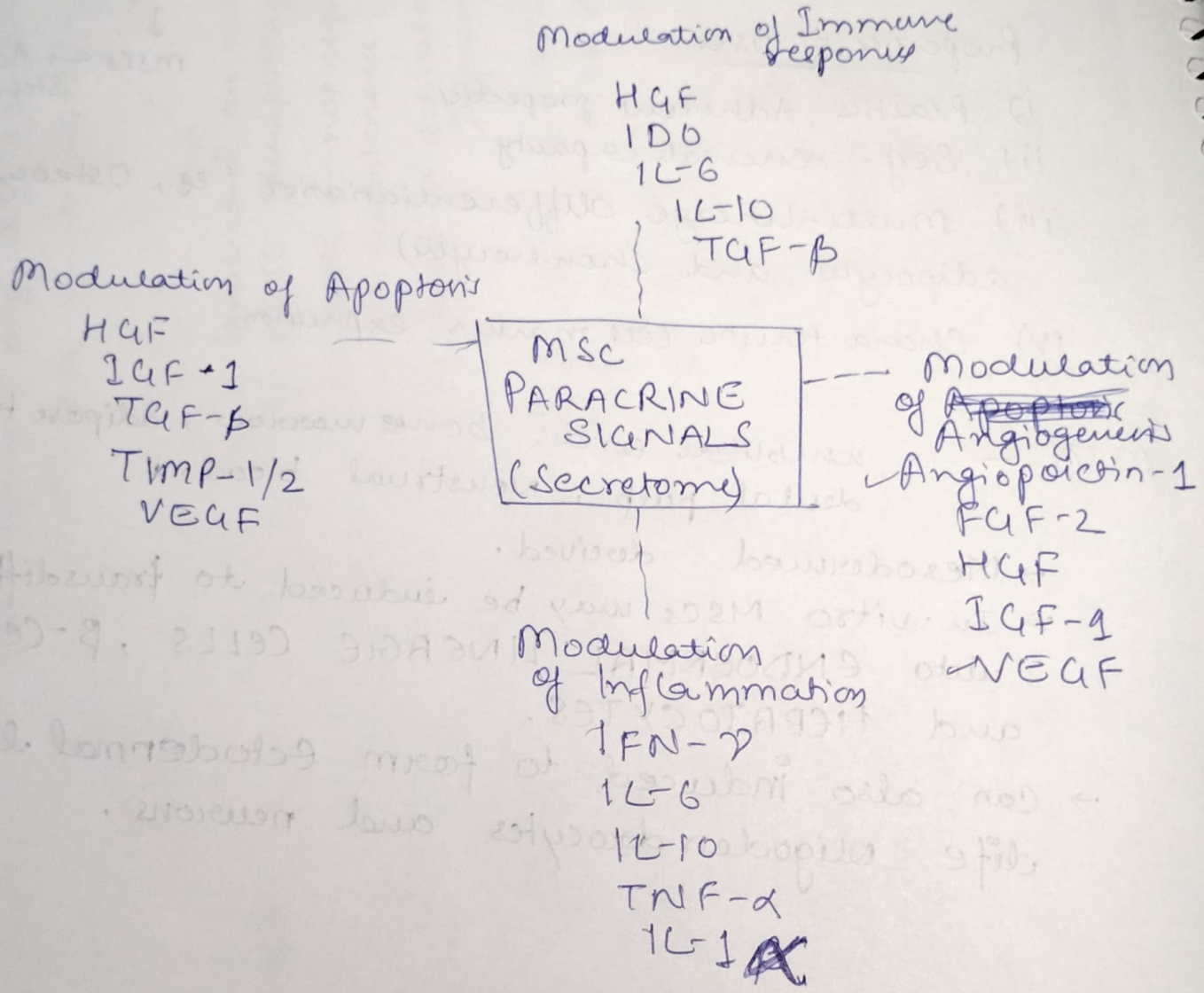
i) Plastic Adherent properties
ii) Sey-renewal capacity
iii) Multi-lineage differentiation (eg., Osteocytes, adipocytes and chondrocytes)
iv) Characteristic cell marker expression.

MSCs ⟶ umbilical cord; bone marrow, adipose tissue dental pulp, menstrual blood, &

→ Mesodermed derived.
→ In-vitro MSCs may be induced to transdifferentiate into ENDOERMAL LINEAGE CELLS, β-CELLS and HEPATOCYTES.
→ Can also induced to form ectodermal lineage like oligodendrocytes and neurons.

Functions Of MSCs.

→ Tissue maintance and repair
→ The potential for differentiantion provides the mechanism for tissue self repair following injury, disease or absence.
→ They also contribute to homeostatic functions they regulate immune responses through various regulation involving cell contact, and secreted factors involving both innate and adaptive immunity.
→ MSCs release a variety of bioactive molecule referred as "SECRETOME" including GFs, enzymes, adhesion protein & cytokines.


Modulation of Immune Response
HGF
IDO
IL-6
IL-10
TGF-β
Modulation of Apoptosis
HGF
IGF-1
TGF-β
TIMP-1/2
VEGF
MSC PARACRINE SIGNALS (Secretome)
Modulation of Angiogenesis
Angiopoietin-1
FGF-2
HGF
IGF-1
VEGF
Modulation of Inflammation
IFN-γ
IL-6
IL-10
TNF-α
IL-1